ESPEC

Free Access Temperature (& Humidity) Chamber

PFL/ PFU Series

Extension of the AR Series lineup with a new free access chamber design.

Possibility of cable ports on both right and left side, and optimized user-friendly features make the Free Access chamber the best solution for your testing.
Two variations for this model:
PFL type －40 to ＋100°C／150･20 to 98%rh and
PFU type －40～＋100°C／150C.

Utility

Both side easy access

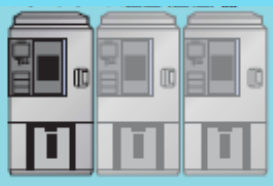
The instrumentation panel has been moved to the door, allowing easy access to specimen through cable ports located on both sides of the equipment. Connection of cables for voltage impression, or specimen measurements is now made easier thanks to the free access.

Optimized volume

Not only the move of the instrumentation panel to the front door reduces the chambers' width, but the exhaust of the refrigerator now located on the ceiling allows to save the space initially needed on the rear side.

Installation space comparison

Free Access Temperature (and Humidity) Chamber



Platinous K Series (Type 3)

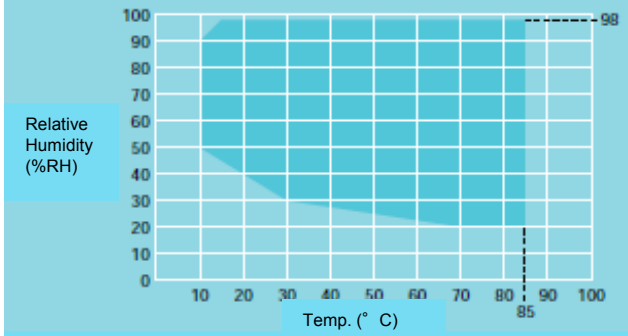
Utility

Wider control range and better control accuracy for temperature and humidity

The use of a refrigeration system equipped with an electronic auto-expansion valve featuring step less control allows accurate temperature and humidity control over a wide range. The lower limits being 10° C for temperature control, and 20%RH for humidity control (at 70 to 85° C)

Temperature and humidity control range PFL

(RT: 23° C, no specimen)



Operation between 30 and 40° C is limited because of frost formation on the cooler (dehumidifier).

High specimen heat load compensation at low temperature

The use of a refrigerator bigger than the one of traditional Platinous chamber type 3 allows a greater heat load compensation: to 600W at -30° C and 320W at -40° C.

Ion Migration evaluation

The Free Access chamber can be combined with ESPEC Ion Migration Evaluation System (sold separately) in order to perform a precise evaluation of ion migration.

Utility

Wick pan

Prevention of water condensation dripping from the wick pan and water splashes

The wick pan arm and drain are integrated , so that any condensation forming in the wick pan is contained to prevent from dripping. Additionally, an automatic water feed system is used to prevent water splashes caused by pressure fluctuations.

Cartridge tank makes water supply easier

Both a stationary tank and a cartridge tank are used for water supply. A window located on the panel allows to check the amount of water remaining in the tank. An alarm buzzer is also triggered when the cartridge is empty. In the meantime, the water is charged from the stationary to the chamber. Water can be added even while the system is operating.

Stationary tank

Portable tank

Automatic supply / drain function of humidification water

The drain switch in AUTO mode can supply or drain the water inside the humidification tray, depending on the operation status. As a result, during pull-down at temperatures below 0 ° C, manual draining of the tray is unnecessary. The AUTO function can be used during both temperature and temperature-humidity operations.

Condenser filter

Easy cleaning of the condenser filter

The condenser filter on the left side of the chamber can be removed and reinstalled for easy cleaning.

Door including closing prevention feature

Safety for the user is improved by including a system of safety-catch on the door hinges, resulting in door opening stop at 60° and 120° .

Utility

Use of HFC to protect the global environment

The refrigerant used for the refrigerator is an HFC which causes no damage to the ozone layer, and thus complies with the measures for ozone layer protection specified by the Montreal Protocol.

Paperless recorder (Option)

The paperless recorder allows data saving on memory card (compact flash). As the Free Access Temperature (and Humidity) Chamber has its instrumentation panel located on the door, it is necessary to use a portable type recorder.

AMI system combination

Variety of options for multiple testing

With a wider temperature / humidity control range, and optimized capacity, the Free Access chamber can offer more possibilities than the standard Platinous K Series. Options can be chosen to meet various testing purposes.

Connected chambers

With long viewing window

Control Operation

P instrumentation

Variety of program settings

On a 6.5” TFT screen, up to 20 program patterns can be stored in memory (1 pattern consisting of 99 steps; patterns can be linked). This touch screen panel allows graphic of the patterns, trend graph display and many other features.

Specimen temperature control function provides accurate testing (option)

Uses a temperature control sensor (× 1) to monitor and control the temperature of the specimen

Direct setting of the Relative Humidity (%)

The Relative humidity can be directly set in %rh; the set values are displayed on screen.

Built-in Timer function

The built-in timer function enables the chamber to be started or shut down automatically at a preset time. A timer operation can be set for month, date, day of the week and time.

Various safety functions

Numerous safety functions and safety devices are provided, including an overheat protector that allows to set an overheating range, as well as upper and lower temperature limit alarm functions.

Specifications

Model			PFL-3KP[H]
Power supply			AC200V 3Φ 3W 50/60Hz, AC220V 3Φ 3W 60Hz, AC380V 3Φ 3W 50Hz, AC400V 3Φ 3W 50Hz
Maximum current (A)			200V: 26.0 ; 220V: 25.0 ; 380V: 13.2 ; 400V: 12.6
Temperature & humidity control system			Balanced Temperature & Humidity Control System (BTHC)
Operating temperature			0 to +40˚
Performance		Temperature (& humid.) range	-40 to +100˚ 20 to 98%rh [-40℃ to +150˚ / 20 to 98%rh]
		Temperature (& humid.) fluctuation	+/- 0.3˚ +/- 2.5%rh [+/- 0.3˚ (-40 to +100℃) +/- 0.5˚ (+100.1 to +150℃) +/- 2.5%rh]
		Temperature (& humid.) uniformity	+/- 0.5˚ +/- 3%rh [+/- 0.5˚ (-40～+100℃) +/- 0.75˚ (+100.1～+150℃) +/- 3.0%rh]
		Temperature heat-up rate	-40 to +100˚ [-40 to +150˚ within 50min.]
		Temperature pull-down rate	+20 to -40˚ within 40min. [+20 to -40˚ within 45min.]
		Allowable heat-load	600W (running at -30˚)
Construction	Exterior material		18 Cr stainless steel plate (hairline finish)
	Interior material		18-8 Cr-Ni stainless steel plate (2B polish)
	Insulation		Chamber: Rigid polyurethane foam (150˚ Rigid polyurethane foam & glass wool) Door: glass wool
Refrigeration system	Refrigeration system		Mechanical single-stage refrigerator system (air-cooled condenser)
	Refrigerator		Hermetically sealed rotary compressor
	Refrigerator capacity		2.2kW
	Expansion mechanism		Electronic auto-expansion valve system
	Coder		Plate fin cooler (also functions as dehumidifier)
Heater			Nichrome strip wire heater
Humidifier			18-12-2.5 Cr-Ni-Mo stainless steel sheated heater (surface evaporating system)
Chamber air circulator			Sirocco fan
Fittings			Viewing window (W180mm x H260mm, heat generator incorporated), Cable port (I.D. 50mm 1 on each side), chamber lamp (fluorescent), integrating hour-meter, Time signal (2 points), Casters (with adjuster feet), power cord (200V type only)
Water supply	Water supply system		Pump out system
	Tank capacity		15L(stationary), 5L(portable type)
	Water quality		Conductivity 0.1 to 10 μS/cm
Inside capacity (L)			306
Dimensions	Inside dimensions		W600 x H850 x D600
	Outside dimensions		W800 x H1820 x D1291
Weight (Kg)			360

Specifications

Model			PFU-3KP[H]
Power supply			AC200V 3Φ 3W 50/60Hz, AC220V 3Φ 3W 60Hz, AC380V 3Φ 3W 50Hz, AC400V 3Φ 3W 50Hz
Maximum current (A)			200V: 18.0 ; 220V: 17.0 ; 380V: 12.7 ; 400V: 12.2
Temperature & humidity control system			Balanced Temperature Control System (BTC)
Operating temperature			0 to +40˚
Performance		Temperature (& humid.) range	-40 to +100˚ [-40℃ to +150˚]
		Temperature (& humid.) fluctuation	+/- 0.3˚ [+/- 0.3˚ (-40 to +100℃) +/- 0.5˚ (+100.1 to +150℃)]
		Temperature (& humid.) uniformity	+/- 0.5˚ [+/- 0.5˚ (-40～+100℃) +/- 0.75˚ (+100.1～+150℃)]
		Temperature heat-up rate	-40 to +100˚ [-40 to +150˚ within 50min.]
		Temperature pull-down rate	+20 to -40˚ within 40min. [+20 to -40˚ within 45min.]
		Allowable heat-load	600W (running at -30˚)
Construction	Exterior material		18 Cr stainless steel plate (hairline finish)
	Interior material		18-8 Cr-Ni stainless steel plate (2B polish)
	Insulation		Chamber: Rigid polyurethane foam (150˚ Rigid polyurethane foam & glass wool) Door: glass wool
Refrigeration system	Refrigeration system		Mechanical single-stage refrigerator system (air-cooled condenser)
	Refrigerator		Hermetically sealed rotary compressor
	Refrigerator capacity		2.2kW
	Expansion mechanism		Electronic auto-expansion valve system
	Coder		Plate fin cooler
Heater			Nichrome strip wire heater
Humidifier			18-12-2.5 Cr-Ni-Mo stainless steel sheated heater (surface evaporating system)
Chamber air circulator			Sirocco fan
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Inside capacity (L)			306
Dimensions		Inside dimensions	W600 x H850 x D600
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Weight (Kg)			360

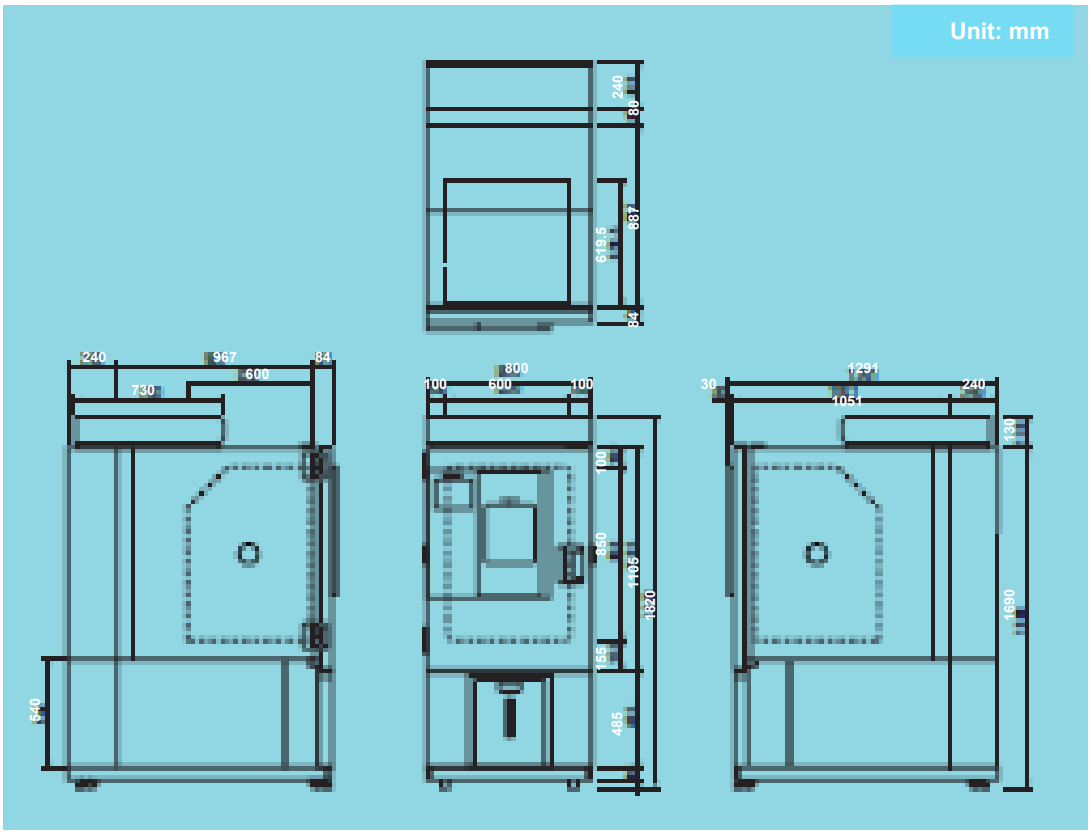
Safety devices

- Leakage breaker for power supply
  (AC200, 220, 380, 400V)
- Boil-dry protector (PFL only)
- Refrigerator overload relay
- Air circulator temperature switch
- SSR overload and short-circuit protecting circuit breaker
- Electrical parts compartment door switch
- Thermal fuse
- Control circuit overload and short circuit protection fuse
- Overload relay for condenser heat exhaust fan
- Compressor temperature switch
- Reverse-prevention relay
- Refrigerator high pressure switch
- High/ Low absolute temperature (and humidity) alarms (Built into temperature (– humidity) controller)
- Burn-out circuit (Built into temperature (– humidity) controller)
- Watchdog timer (Built into temperature (– humidity) controller)
- Specimen power supply control terminals
- Overheat protector

Fittings

- Cable port plug Φ50mm silicon rubber……2
- Brackets 18-8 Cr-Ni Stainless steel……4
- Shelves 18-8 Cr-Ni Stainless steel ……2
  550x567mm (PFL or PFU-H)
- Shelves steel wire (PFU only)……2
  (Resin coated surface) 550x567mm
- Cartridge fuse……1 set
- User's manual ……1 set
- <PFL only> Wick (24 pieces)……1 box

External view



Options

Emergency stop switch

Stops the chamber immediately.

Cable port

Additional cable ports to allow the connection of the specimen to electric cables, etc.

- Φ 25mm
- Φ 50mm
- Φ 100mm
- Flat cable

*equipped with rubber plug

Cable port rubber plug

The additional silicon sponge rubber plug.

- Φ 25mm
- Φ 50mm
- Φ 100mm
- Flat cable

Shelf and shelf brackets

Standard shelf and shelf brackets can be added as required.

Communication function

Connects the chamber to a personal computer, enabling operation control of the chamber. (RS-485 as default)

- GP-IB
- RS-232C

Paperless recorder portable type

Records temperature of each section such as the temperature inside the chamber.
[Temperature type]
Temperature range: -100 to +200° C
Number of inputs: Temperature 1
(5 more channels can be turned ON)
Data saving cycle: 5 sec.
External recording media: CF memory card (128MB)
Language support: ENG, JPN
[Temperature and humidity type]
Temperature range: -100 to +200° C
Humidity range: 0 to 100%rh
Number of inputs: Temperature 1 / Humidity 1
(4 more channels can be turned ON)
Data saving cycle: 5 sec.
External recording media: CF memory card (128MB)
Language support: ENG, JPN

Water supply

Water circuit for pure water supply
•Water supply unit B: De-ionizing cartridge system (pipe for water supply to water circuit)

•Water supply unit C: Direct water connection

When installing chamber on upper floor with the option above, a water leak detector (sold separately) is recommended to be equipped in case water leaks.

Temperature recorder (digital)

SRJ25

- -100 to +200° C
- 6 dots
- Portable type

Temperature and humidity recorder (digital)

SRJ12

- −50 to +150° C / 0 to 100%rh
- 100mm
- 6 dots Temp. 5
  Thermocouple JIS−T
  Humidity: 1DC to 5V
- Digital type
- Free power supply (AC100V to AC240V)

Specimen temperature control terminal

A thermocouple to measure specimen temperature is attached to the specimen, and connected to the specimen temperature input terminal, located in the optional panel on the door.